pamphlets about food values. The new products must undersell the old ones, and then they will soon begin to find buyers.

Prof. Dunstan and his staff are to be congratulated on the bold way in which they have grappled with the problem and the lucid statement they have drawn up. Already they see some results of their labour; shipments of seeds are beginning to go to Hull to be pressed, and the residues (which alone present any difficulty) have been put under investigation at the various agricultural colleges. Only gross mismanagement can prevent the development of the new industry—unless after the war the Germans again subsidise their own industry so as to extinguish ours, as it is said they did on an earlier occasion when attempts were made to work up the seeds in this country.

E. J. R.

PUBLIC HEALTH ADMINISTRATION.

A Manual for Health Officers. By J. S. MacNutt. Pp. x+650. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1915.) Price 12*s*. 6*d*. net.

IN this country there are numerous manuals of public health, detailing the duties of medical officers of health and other sanitary officers. In the United States we believe the volume here noticed is the first to review public health administration from a practical viewpoint. Part i. is concerned with the organisation and powers of health authorities, part ii. with public health administration.

In a community consisting of separate States, each possessing home rule in sanitary matters, there is evidently much scope for differing regulations. Such differences exist, and we should have liked a fuller statement of the types of legislation and administration than is given in this manual. The information given is, however, clearly set out, and the reader wishing for guidance will find in this book much information in regard to the various classes of service—inspection service, medical service, public health nurse, laboratory service, veterinary service, labour, legal counsel and service.

State organisation is vested in a board or in a commissioner, more often in a board. In Massachusetts this consists of seven persons appointed by the governor, with the advice and consent of his council, for a term of seven years. In New York State, on the other hand, power is vested in a commissioner of health, assisted by an advisory council consisting of two laymen, one sanitary engineer, and three physicians. In both arrangements, democratic control in this reputedly democratic country is indirect and remote, and the medical professions exert a predominant influence. As time passes and experience becomes riper, it will be interesting to compare American city experience with English city experience in sanitary matters. In the latter, as is well known, the electors can more directly and more swiftly influence and alter the constitution of the sanitary authority; and although this sometimes means selfish obstruction to sanitary progress, it necessitates progressive public education in local sanitary administration, and there is seldom serious relapse in progress made. Nor is "graft" so conspicuous in English as in some American cities.

It is remarkable that the States have only in an embryonic stage any central and national health organisation corresponding with that of the English Local Government Board. There is much agitation on this subject; and although the statement sometimes made that "Uncle Sam" spends millions on the health of hogs and little or nothing to promote the health of human beings is exaggerated, it contains a modicum of truth.

The gaps in official administration are much more largely filled up by voluntary associations in America than in this country; and anyone wishing to study the problems of charity, of tuberculosis, of housing, and of child welfare, would need to go largely to these societies for information and for insight into some of the best American work.

Excellent sections of this book are concerned with exploding the sanitary fallacies surviving from an earlier period. The sanitary significance of dirt is stated with discrimination. The limited *rôle* of sewer gas and foul odours is defined; and the error of supposing that running water will more quickly purify itself from pathogenic germs than stagnant water is shown.

Each communicable disease is dealt with in turn, and the succinct advice given is sound and reasonable. The following statement from the section on tuberculosis is the basis on which modern administrative control over this disease is founded. "Experience shows that the normal human system is capable of resisting small doses of infection when it would succumb to a heavier dose, and it is just these heavier doses which supervision over the germ-shedding patient prevents."

In regard to small-pox, it is urged that a hospital for this disease "may be a special department of a regular contagious disease hospital, and, if properly conducted, need not be located at a distance from other habitations. . . . Certainly air infection out of doors is practically nil." This is in direct contradiction to the rigid rule of the

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English Local Government Board, which insists on a quarter-mile distance from even a small group of houses.

We have not left space for discussing the chapters on child hygiene, on milk and other food supplies, water supplies, housing, nuisances, sanitary law, and vital statistics; but in each of these the English sanitarian will find useful points for comparison with our own methods. The last chapter deals with publicity; and here is, perhaps, the most characteristic feature of public health work in the States. In relation to the Press, exhibitions, lectures, motion pictures, etc., useful hints are given for bringing home the lessons of sanitation to the general public.

OUR BOOKSHELF.

North America during the Eighteenth Century: A Geographical History. By T. Crockett and B. C. Wallis. Pp. vi+116. (Cambridge: At the University Press, 1915.) Price 3*s.* net.

THE authors have collaborated in an interesting experiment, and have wisely chosen for their first essay (for we presume it is a prelude to others) a region in which the facts of history are easily correlated with those of geography. In one sense it is only another account of the rise of the United States of America, but in a different sense it is a new story, for it tells the history of a century in the light of the place where it occurred. One can imagine oneself in America and watch the drama unfold. We are glad to see that the authors invert the old term and speak of a geographical history, for not only should geography precede history in course of study, but the term historical geography has fallen on evil days so far as school books are concerned. In most cases, except for a preliminary chapter and a map or two, it has no relation to geography.

This book begins with the usual preliminary chapter, but the succeeding ones are not disappointing. The influence of routes and relief, and the question of place relations, are kept to the fore throughout, and very useful are the terse summaries at the end of each chapter. There are many useful black and white maps. In the way of criticism we could wish that the first two maps were a little clearer, and that the authors had curtailed the length of some of their sentences. But we welcome the volume as a most illuminating book.

R. N. R. B.

First Aid in the Laboratory and Workshop. By A. A. Eldridge and Dr. H. V. A. Briscoe. Pp. 32. (London: Edward Arnold, 1915.) Price 1*s.* net.

THE authors of this little book, who have been in charge of first aid organisation in chemical and physical laboratories, have found that the ordinary text-books devote too much space to serious fractures and other injuries, but give little information regarding ordinary accidents, such as are apt to occur in laboratories and workshops, for instance, burns produced by chemicals, eye injuries, shocks produced by electric currents, and poisoning. They have therefore written this pamphlet to meet this need. It is prefaced by a commendatory foreword from Sir Alfred Keogh, and we heartily endorse his praise. The directions are terse, clear, and correct.

Determinative Mineralogy: With Tables for the Determination of Minerals by Means of their Chemical and Physical Characters. By Prof. J. Volney Lewis. Second edition. Pp. vii+155. (London: Chapman and Hall, Ltd., 1915.) Price 6*s.* 6*d.* net.

THE present edition differs from the first—reviewed in our issue for January 15, 1914 (vol. xcii., p. 550)—chiefly in the restatement with each table of the classificatory characters and tests leading up to it. The supplementary tables at the end have been extended to include specific gravity and chemical composition; and many more delicate tests have been introduced in both the text and the tables.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Principle of Similitude.

(1) IN his article under the above heading (NATURE, March 18, 1915, p. 66) Lord Rayleigh deduces, by the method of dimensions, an equation for the rate of heat transfer between a solid body and a stream of fluid in which it is immersed. Commenting on this equation, M. Riabouchinsky (NATURE, July 29, p. 591) remarks that heat, temperature, length, and time are treated in the deduction as independent units; and that if we suppose only three of these units to be "really independent" we obtain a different and less definite result.

In a further note (NATURE, August 12, p. 644) Lord Rayleigh acknowledges the interest of the question suggested by M. Riabouchinsky, and indicates the direction in which the solution of the apparent difficulty is to be sought. But since he does not pursue the subject further and the reader may feel as if left in mid-air, it seems worth while that the point raised by M. Riabouchinsky should be somewhat further elucidated.

(2) The question whether any real doubt has been thrown on the validity of Lord Rayleigh's equation hinges on the answer to the question whether temperature can be derived from energy, length, and time, *i.e.* from mass, length, and time.

What do we mean when we say that a given kind of physical magnitude can be "derived" from certain other kinds which we call fundamental? We mean simply that experience has shown that if we use, or combine, certain particular magnitudes of the fundamental kinds in a prescribed way, we thereby determine a magnitude of the derived kind, the size of this resulting derived magnitude being dependent only on the sizes of the particular fundamental magnitudes with which we started, when once the method of using them has been specified. For example, we know that if we construct a rectangle of altitude l on a base l

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